

Monitoring Relays Pump alternating Type DLA71

CARLO GAVAZZI



- Pump alternating relay for 2 or 3 pumps
- Output: 2 x 5 A SPST relay or 3 x 5 A SPST
- For mounting on DIN-rail in accordance with DIN/EN 50 022
- 35.5 mm DIN-rail housing
- LED indication for relay and power supply ON
- Galvanically separated power supply
- Built-in delay for the second or third pump in case of simultaneous activation is required
- Built-in function for automatic rotation of the pumps

Product Description

DLA71 is relay made to alternate 2 or 3 pumps in a multiple pump system. In case of need (i.e.: overflow) the second, or even the third pump can be activated together with the first one. In case more than one pump is required to start at the same time, the pumps start 10 s after the previous to

avoid big inrush current.

The LED indicates the state of the alarm and the output relay.

35.5 mm wide housing suitable both for back and front panel mounting.

Ordering Key

DLA 71 T B23 3P

Housing _____
Function _____
Type _____
Item number _____
Output _____
Power supply _____
Number of pumps _____

Type Selection

Mounting	Output	Function	Supply: 24/48 VAC	Supply: 115/230 VAC
DIN-rail	2 x SPST	For two pumps	DLA 71 D B48 2P	DLA 71 D B23 2P
DIN-rail	3 x SPST	For three pumps	DLA 71 T B48 3P	DLA 71 T B23 3P

Input Specifications

Contact input	Terminals
DLA71...2P (normal mode)	
ON/OFF 1 pump	C, S1
ON/OFF 2 pumps	C, S2
DLA71...2P (differential mode)	
first pump starts	C, S1
first pump stops	C, S3
second pump start	C, S2
second pump stop	C, S4
DLA71...3P (normal mode)	
ON/OFF 1 pump	C, S1
ON/OFF 2 pumps	C, S2
ON/OFF 3 pumps	C, S3
DLA71...3P (full mode)	
ON 1 pump	C, S1
ON 2 pumps	C, S2
ON 3 pumps	C, S3
OFF all pumps	C, S4
Disabled	> 10 kΩ
Enabled	< 1 kΩ
Voltage	< 25 V
Current	< 2 mA
Emptying mode	N.O. contacts
Filling mode	N.C. contacts

Output Specifications

Output	DLA71...2P DLA71...3P	2 x SPST NO relay 3 x SPST NO relay
Rated insulation voltage		250 VAC
Contact ratings (AgSnO ₂)		μ
Resistive loads	AC 1 DC 12	5 A @ 250 VAC 5 A @ 24 VDC
Small inductive loads	AC 15 DC 13	1.5 A @ 250 VAC 1.5 A @ 24 VDC
Mechanical life		≥ 30 x 10 ⁶ operations
Electrical life		≥ 10 ⁵ operations (at 5 A, 250 V, cos φ = 1)
Operating frequency		≤ 7200 operations/h
Dielectric strength		
Dielectric voltage		2 kVAC (rms)
Rated impulse withstand volt.		4 kV (1.2/50 μs)



Supply Specifications

Power supply Rated operational voltage through terminals: A1, A2 or A3, A2	Overvoltage cat. III (IEC 60664, IEC 60038)
B48:	24/48 VAC $\pm$ 15% 45 to 65 Hz, insulated
B23:	115/230 VAC $\pm$ 15% 45 to 65 Hz, insulated
Dielectric voltage Supply to input Supply to output Input to output	4 kV (1.2/50 μ s) 4 kV (1.2/50 μ s) 4 kV (1.2/50 μ s)
Rated operational power AC	3 VA

General Specifications

Reaction time Closing input Opening input Minimum delay to activate the rescue pumps	< 100 ms < 100 ms 10 s
Continuous working time to activate the rotation pumps	6 h $\pm$ 10%

General Specifications (cont.)

Indication for Power supply ON One Pump ON Two Pumps ON Three Pumps ON(DLA71...3P)	LED, green, steady as above, flashing 1 Hz as above, flashing 2 Hz as above, flashing 3 Hz Note: if more than one pump is active, the indication refers to the pump started last.
First pump activated after power up	Random
Environment Degree of protection Pollution degree Operating temperature Storage temperature	(EN 60529) IP 20 3 -20 to 60°C, R.H. < 95% -30 to 80°C, R.H. < 95%
Housing Dimensions Material	35.5 x 81 x 67.2 mm PA66 or Noryl
Weight	Approx. 135 g
Screw terminals Tightening torque	Max. 0.5 Nm acc. to IEC 60947
Product standard	EN 60255-6
Approvals	UL, CSA
CE Marking EMC Immunity Emissions	L.V. Directive 2006/95/EC EMC Directive 2004/108/EC According to EN 60255-26 According to EN 61000-6-2 According to EN 60255-26 According to EN 61000-6-3

Mode of Operation

DLA71 is made for pumping systems where 2 or 3 pumps are in parallel. It lets the pumps work alternatively, allowing more pumps to work together in case of need.

Example 1

(emptying a basin, 2-pump system)

As soon as the liquid reaches switch S1 one pump starts. As soon as S1 switches back the pump stops. When switch S1 is activated again the other pump starts allowing uniform wear and tear of all the pumps. If switch S2 is activated both pumps start (2 pumps running at the same time). When S2 switches back the pump running since most time stops.

Example 2

(emptying a basin, 2-pump system, differential mode)
In this case the pumps are separately started and stopped by the two pairs of switches S1, S2 and S3, S4. Appropriate positioning allows the pumps to work together in case of need.

Note (2-pump system)

If the system is continuously working with only one pump, after working for 6 hours, DLA71 stops the pump and the second one automatically starts. This rotation is repeated every 6 hours of single and continuative work of a pump.

Example 3

(emptying a basin, 3-pump system, normal mode)
The system works exactly as

described in example 1 except that if switch S3 is reached three pumps work at the same time. When they switch back the pumps are turned off in sequence starting from the one running longer.

Example 4

(emptying a basin, 3-pump system, full mode)

As soon as the liquid reaches switch S1 one pump starts. When it drops below switch S4 it stops. If switch S1 is triggered again another pump starts. If switch S2 is activated a second pump starts (rescue function). If switch S3 is activated all the pumps operate. The only switch to stop all the pumps active at a certain time is S4.

Note (3-pump system)

If the system is continuously working with only one pump, after working for 6 hours, DLA71 stops the pump and the second one automatically starts. If also the second pump works continuously alone for 6 hours, it is stopped and the third pump is then started.

If a couple of pumps is continuously working for 6 hours, the one running for more time stops and the free one starts.

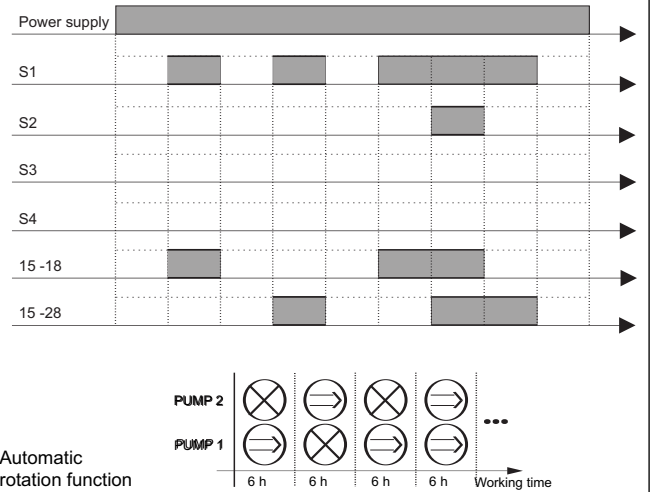
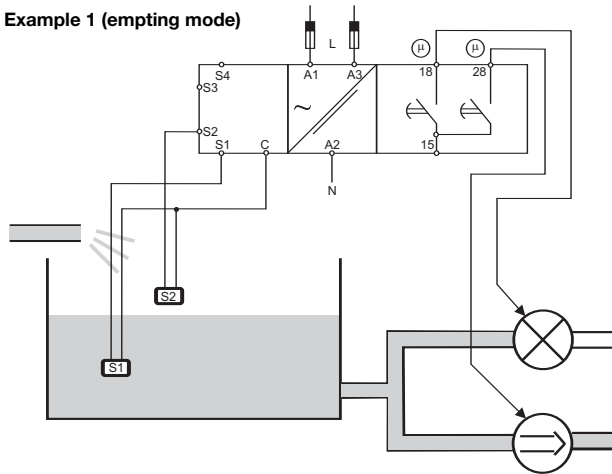
This rotation is repeated every 6 hours of continuative work of a pump or a couple of pumps.

Note (2 and 3-pump systems)

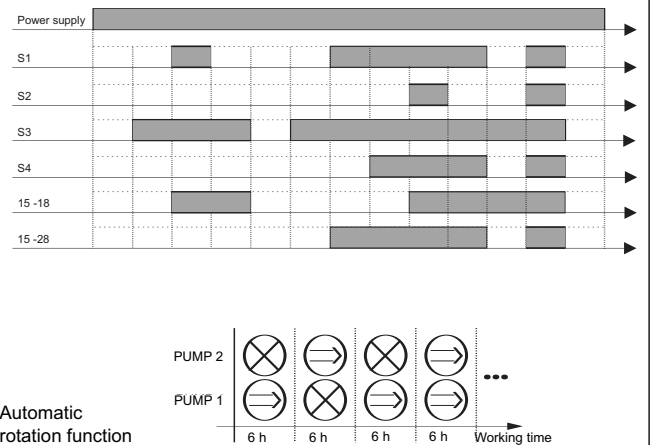
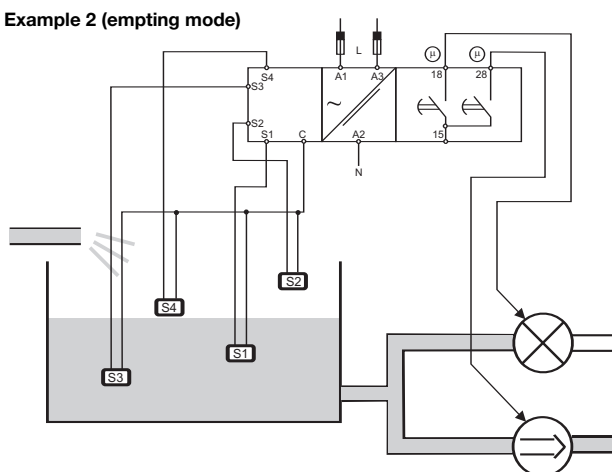
In case the task is to fill a basin, all the switches are reversed in the basin itself.

Operation Diagrams

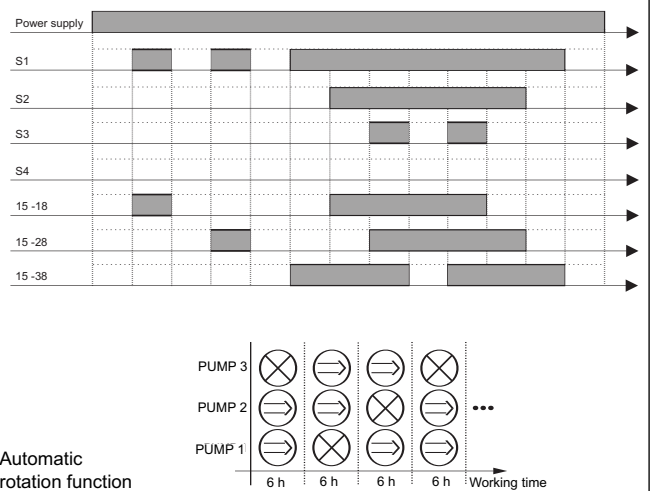
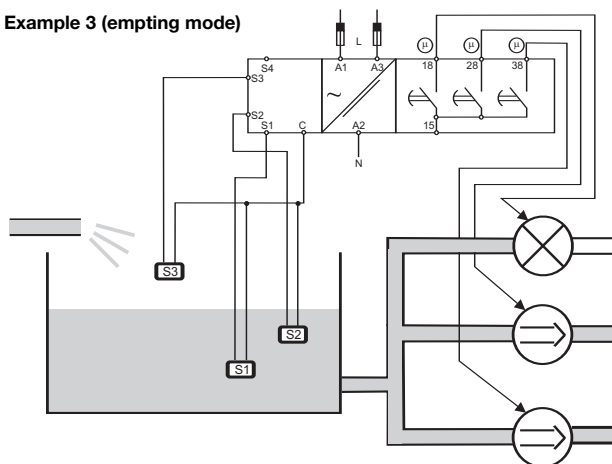
Example 1 (emptying mode)



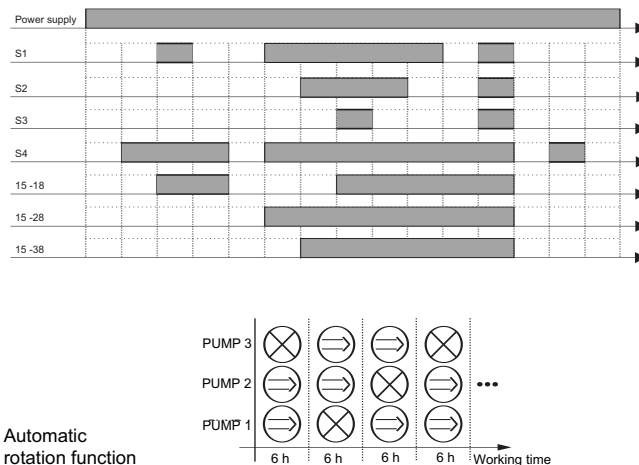
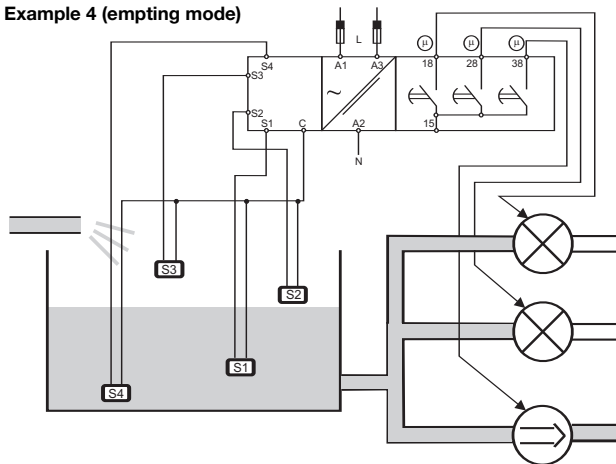
Example 2 (emptying mode)



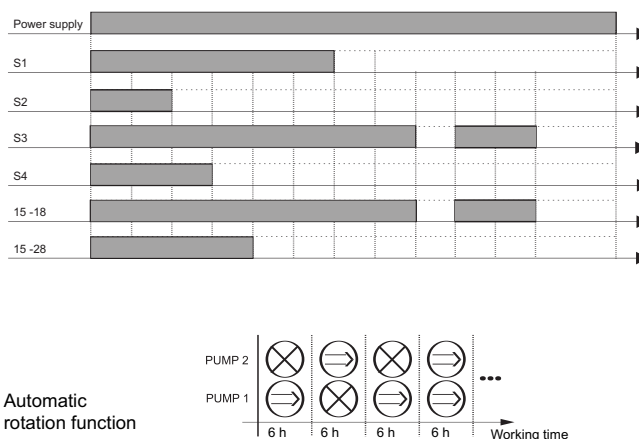
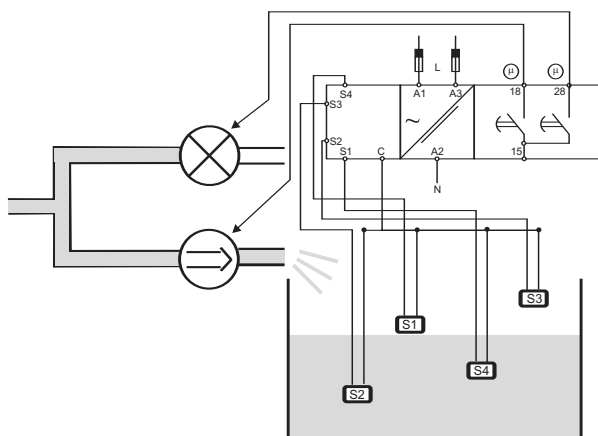
Example 3 (emptying mode)



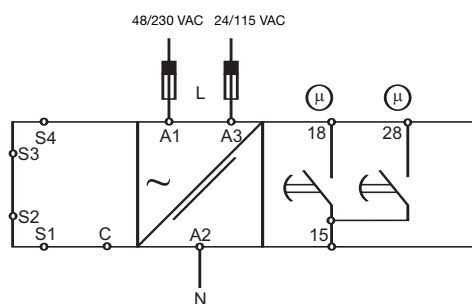
Example 4 (emptying mode)



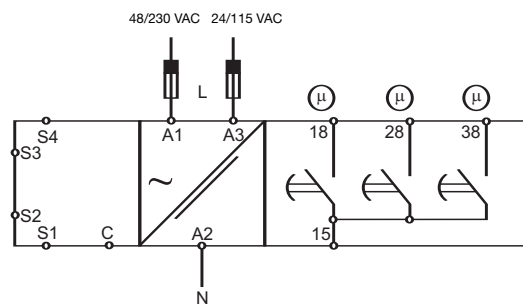
Example 5 (filling mode)



DLA71...2P



DLA71...3P



Dimensions

